

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

Claim 1 (Currently Amended): A guide apparatus for guiding an advancing continuous fiber bundle used when winding the fiber bundle on a bobbin, which comprises:

~~a pair of~~ a first guide and a second guide ~~both of which guides are~~ each of said guides being disposed on the in a passage on through which the fiber bundle is advanced, ~~and the wherein the~~ axis lines of the guides, ~~on which guides the fiber bundle is advanced in a twisted state, are in a relation~~ twisted away from each other in a space, and

a parallel guide, which is disposed at the downstream side of the pair of the guides on the passage, through which the fiber bundle is guided to the bobbin ~~in a state of twisted back,~~ and which has the axis line parallel to that of the bobbin,

the first guide ~~being~~ comprising a substantially flat guide or a conical guide, on which the fiber bundle is advanced in a twisted state, and which has the axis line thereof arranged so as to cross substantially at a right angle to that of the bobbin

the second guide ~~being~~ comprising a conical guide on which the fiber bundle is advanced in a twisted state, on said parallel guide, the fiber bundle being twisted back to the same direction as the direction of the fiber bundle when being supplied, or being twisted further in the same direction to thereby turn the fiber bundle upside down, and wherein

the position at which the fiber bundle is wound on the bobbin and the width of the fiber bundle ~~being~~ are stabilized by means of ~~the said~~ parallel guide.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The guide apparatus according to claim 1 ~~or 2~~ wherein the second guide is disposed so that the axis line ~~of the guide thereof~~ has an inclination angle of less than 90° toward the axis line of the bobbin.

Claim 4 (Canceled).

Claim 5 (Currently Amended): The guide apparatus according to claim 1 which comprises a common supporting means and a traverse mechanism wherein the pair of the guides and the parallel guide are supported by means of a said common supporting means so as to move in linkage, and the supporting means is reciprocatively moved in the direction parallel to the axis line of the bobbin by means of a said traverse mechanism along nearly the whole length of the bobbin.

Claim 6 (Currently Amended): A winding machine for winding an advancing continuous fiber bundle on a bobbin, which comprises:

a guide portion comprising the guide apparatus defined in claim 1, and a winding portion,

wherein, in the guide portion, a first fixed guide roll is further disposed above the guide apparatus with the axis line of the first fixed guide roll being parallel to that of the bobbin, ~~and~~

~~the rotational driving of the bobbin in the winding portion being carried out by means of a torque motor.~~

Claim 7 (Currently Amended): The winding machine according to claim 6 wherein the first fixed guide roll is disposed so that one first fixed roll is disposed for a unit of bobbin,

and the first fixed guide roll has ~~a shape of a hand drum trunk of which has~~ a curved circumferential surface depressed at ~~its~~ a center portion thereof.

Claim 8 (Currently Amended): The winding machine according to claim 7 ~~wherein~~ which comprises a second fixed guide roll is further disposed in parallel to the first fixed guide roll at the upper stream side of the first fixed guide roll on the passage for advancing the continuous fiber bundle and above the pair of the first guide and wherein the second guide is disposed in the guide apparatus, the second fixed guide roll ~~being comprising~~ a flat roll.

Claim 9 (Currently Amended): The winding machine according to claim 6 ~~wherein~~ which comprises a third fixed guide roll ~~is further~~ disposed between the first fixed guide roll and the pair of the guides, a dancer roll is ~~still further~~ disposed between the first fixed guide roll and the third fixed guide roll, ~~and wherein~~ the first and the third guide rolls ~~are comprise~~ flat rolls or ~~hand drum-like rolls having~~ have curved circumferential surfaces depressed at ~~their~~ center portions thereof.

Claim 10 (Currently Amended): The winding machine according to claim 9 ~~wherein~~ ~~the rotational driving of the bobbin is controlled by a~~ which comprises means for controlling the tension of the continuous fiber bundle based on the displacement of the dancer roll for controlling rotational driving of the bobbin, ~~and all wherein each~~ of the first and the third fixed guide rolls ~~are comprise~~ flat rolls or ~~hand drum-like rolls having~~ have curved circumferential surfaces depressed at ~~their~~ center portions thereof.

Claim 11 (Currently Amended): The winding machine according to claim 9 ~~wherein~~ ~~the rotational driving of the bobbin is controlled by a~~ which comprises means for controlling

the tension of the continuous fiber bundle based on the displacement of the dancer roll for controlling rotational driving of the bobbin, and the first and the third fixed guide rolls ~~are composed of~~ comprise a combination of a flat roll and a hand drum-like roll having a curved circumferential surface depressed at ~~it's~~ a center portion thereof.

Claim 12 (Currently Amended): A winding machine for winding a plurality of advancing continuous fiber bundles respectively on a plurality of bobbins, which comprises:
a guide portion comprising a plurality of the guide apparatuses defined in claim 1, and
a winding portion comprising plurality of bobbins,
wherein in the guide portion, a first fixed guide roll axis line ~~of which thereof~~ is parallel to that of the axis line of a bobbin ~~is further disposed above the guide apparatuses, the first fixed guide roll being comprising~~ a single flat roll so as to guide the plurality of continuous fiber bundles simultaneously to each of the plurality of guide apparatuses.

Claim 13 (Currently Amended): A method for ~~making a bobbin of a continuous fiber bundle comprising winding an advancing~~ which comprises:

guiding a continuous fiber bundle advancing on a passage and winding the fiber bundle on a bobbin by guides ~~by using the fiber winding machine defined in claims 6~~

disposing the first guide and the second guide such that the axis lines of the respective guides are in a relation twisted away from each other in a space, the guides comprising a first guide and a second guide, and

disposing a parallel guide at the downstream side of the pair of the guides on the passage, the parallel guide having an axis line parallel to that of the bobbin,

advancing the fiber bundle in a twisted state, the first guide comprising a flat guide which has the axis line arranged so as to cross substantially at a right angle to the axis line of

the bobbin or a conical guide which has the axis line arranged so as to cross with an angle θ to the axis line of the bobbin,

twisting back the fiber bundle advancing in a twisted state to the same direction as the direction of the fiber bundle when it is being supplied, or twisting further in the same direction to thereby turn the fiber bundle upside down, the second guide comprising a conical guide, and

winding the fiber bundle, which has been twisted back or turned, on the bobbin, wherein the position at which the fiber bundle is wound on the bobbin and the width of the fiber bundle are stabilized by means of the parallel guide.

Claim 14 (Currently Amended): The method for making a bobbin of a continuous fiber bundle according to claim 13 ~~wherein~~ which comprises forming the continuous fiber bundle ~~comprises so as to have~~ 12,000 to 150,000 filaments of carbon fiber.

Claim 15 (Original): A carbon fiber bobbin obtained by the method defined in claim 13.

Claim 16 (New): A guide apparatus for guiding an advancing continuous fiber bundle used when winding the fiber bundle on a bobbin, which comprises:

a first guide and a second guide, each of said guides being disposed on a passage on which the fiber bundle is advanced, wherein the axis lines of the guides are twisted away from each other in a space,

a parallel guide, which is disposed at a downstream side of the pair of the guides on the passage, through which the fiber bundle is guided to the bobbin, and which has the axis line parallel to that of the bobbin,

the first guide comprising a conical guide on which the fiber bundle is advanced in a twisted state, and which is disposed such that an oblique line with which the fiber bundle contacts first crosses at right angle to the axis line of the bobbin, and

the second guide comprising a conical guide on which the fiber bundle is advanced in a twisted state, on the parallel guide, the fiber bundle being twisted back to the same direction as the direction of the fiber bundle when it is being supplied, or being twisted further in the same direction thereby turning the fiber bundle upside down,

wherein the position at which the fiber bundle is wound on the bobbin and the width of the fiber bundle is stabilized by means of the parallel guide.